

Claims:

Sub A>1. A screw for securing wood products, comprised of:
a shaft and a head, wherein the head is provided with a top surface having
5 an opening to receive a tool;
wherein the shaft is provided with a threaded upper region located
proximate the head and a threaded lower region located near a distal end of the
screw, the distal end having a tip, and the number of threads per unit length in the
upper region exceeds the number of threads per unit length in the lower region.

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Sub B>2. The screw of claim 1 wherein there are at least twice as many threads per unit
length in the upper region as there are threads per unit length in the lower region.

15 3. The screw of claim 1 wherein the head is provided with a bottom surface, a crown
that extends around the perimeter of the head and extends beyond the lower
surface of the head thereby defining an open volume between the lower edge of
the crown and the shaft of the screw.

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4. The screw of claim 1 wherein the head is provided with a bottom surface, a crown
that extends around the perimeter of the head, wherein the crown extends beyond
the lower surface of the head, forming a recessed region between the lower edge
of the crown and the shaft of the screw.

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5. The screw of claim 1 wherein the head is provided with a bottom surface having a
v-shaped undercut.

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6. The screw of claim 1 wherein the head is provided with a bottom surface having a
v-shaped undercut having a conical surface in the undercut that connects the lip
with a conical underside of the head.

1000 800 600 500 400 300 200 100

7. The screw of claim 6 wherein the conical surface slants away from the lip toward the axis of the shaft at an angle of approximately 45°.

5 8. The screw of claim 1 wherein the thread pattern of the lower region is symmetrical.

9. The screw of claim 1 wherein the cross sectional area of the shaft in the upper region is greater than the cross sectional area of the shaft in the lower region.

10_{sub a} 10. The screw of claim 1 wherein the upper region has an inverted buttress thread configuration.

11. The screw of claim 1 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

15_{sub c} 12. A screw for securing wood products, comprised of a shaft and a head, wherein the head is provided with a top surface having an opening to receive a tool; wherein the shaft is provided with a threaded upper region located proximate the head and a threaded lower region located near a distal end of the screw, the distal end having a tip, wherein the cross sectional area of the shaft in the upper region is greater than the cross sectional area of the shaft in the lower region, and the number of threads per unit length in the upper region exceeds the number of threads per unit length in the lower region.

20 25_{sub a} 13. The screw of claim 12 wherein there are at least twice as many threads per unit length in the upper region as there are threads per unit length in the lower region.

14. The screw of claim 12 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head and extends beyond the lower surface of the head thereby defining an open volume between the lower edge of the crown and the shaft of the screw.

15. The screw of claim 12 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head, wherein the crown extends beyond the lower surface of the head, forming a recessed region between the lower edge of the crown and the shaft of the screw.

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16. The screw of claim 12 wherein the head is provided with a bottom surface having a v-shaped undercut.

10 17. The screw of claim 12 wherein the head is provided with a bottom surface having a v-shaped undercut having a conical surface in the undercut that connects the lip with a conical underside of the head.

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Sub A4> 18. The screw of claim 20 wherein the conical surface slants away from the lip 15 toward the axis of the shaft at an angle of approximately 45°.

19. The screw of claim 21 wherein the head is provided with a top surface having a #2 square opening.

20 Sub B4> 20. The screw of claim 12 wherein the thread pattern of the lower region is symmetrical.

21. The screw of claim 12 wherein the upper region has an inverted buttress thread configuration.

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22. The screw of claim 12 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

23. A screw for securing wood products, comprised of 30 a shaft and a head, wherein the head is provided with a top surface having an opening to receive a tool;

5 wherein the shaft is provided with a threaded upper region located proximate the head and a threaded lower region located near a distal end of the screw, the distal end having a tip, wherein there are at least twice as many threads per unit length in the upper region as there are threads per unit length in the lower region.

10 *Sub 45* 24. The screw of claim 23 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head and extends beyond the lower surface of the head thereby defining an open volume between the lower edge of the crown and the shaft of the screw.

15 *Sub 0.* 25. The screw of claim 23 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head, wherein the crown extends beyond the lower surface of the head, forming a recessed region between the lower edge of the crown and the shaft of the screw.

20 26. The screw of claim 23 wherein the head is provided with a bottom surface having a v-shaped undercut.

25 27. The screw of claim 23 wherein the head is provided with a bottom surface having a v-shaped undercut having a conical surface in the undercut that connects the lip with a conical underside of the head.

30 28. The screw of claim 27 wherein the conical surface slants away from the lip toward the axis of the shaft at an angle of approximately 45°.

Sub 46 29. The screw of claim 23 wherein the head is provided with a top surface having a #2 square opening.

Sub 0> 30. The screw of claim 23 wherein the thread pattern of the lower region is symmetrical.

5 31. The screw of claim 23 wherein the upper region has an inverted buttress thread configuration.

32. The screw of claim 23 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

10 33. The screw of claim 23 wherein the cross sectional area of the shaft in the upper region is greater than the cross sectional area of the shaft in the lower region.

Sub 0> 34. A screw for securing wood products, comprised of
15 a shaft and a head, wherein the head is provided with a top surface having an opening to receive a tool;
wherein the shaft is provided with a threaded upper region located proximate the head and a threaded lower region located near a distal end of the screw, the distal end having a tip, wherein the number of threads per unit length in the upper region exceeds the number of threads per unit length in the lower region, and the upper region has an inverted buttress thread configuration.

Sub 0> 35. The screw of claim 34 wherein there are at least twice as many threads per unit length in the upper region as there are threads per unit length in the lower region.

25 Sub 0> 36. The screw of claim 34 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head and extends beyond the lower surface of the head thereby defining an open volume between the lower edge of the crown and the shaft of the screw.

37. The screw of claim 34 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head, wherein the crown extends beyond the lower surface of the head, forming a recessed region between the lower edge of the crown and the shaft of the screw.

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38. The screw of claim 34 wherein the head is provided with a bottom surface having a v-shaped undercut.

10 39. The screw of claim 34 wherein the head is provided with a bottom surface having a v-shaped undercut having a conical surface in the undercut that connects the lip with a conical underside of the head.

40. The screw of claim 39 wherein the conical surface slants away from the lip toward the axis of the shaft at an angle of approximately 45°.

Sub 41. The screw of claim 34 wherein the head is provided with a top surface having a 15 #2 square opening.

Sub 42. The screw of claim 34 wherein the thread pattern of the lower region is symmetrical.

20 43. The screw of claim 34 wherein the cross sectional area of the shaft in the upper region is greater than the cross sectional area of the shaft in the lower region.

Sub 44. The screw of claim 34 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

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Sub 45. A screw for securing wood products, comprised of:
a shaft and a head, wherein the head is provided with a top surface having an opening to receive a tool, a bottom surface, a crown that extends around the perimeter of the head and extends beyond the lower surface of the head thereby defining an open volume between the lower edge of the crown and the shaft of the screw;

wherein the shaft is provided with a threaded upper region located proximate the head and a threaded lower region located near a distal end of the screw, the distal end having a tip, and the number of threads per unit length in the upper region exceeds the number of threads per unit length in the lower region.

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~~sub a~~ 46. The screw of claim 45 wherein there are at least twice as many threads per unit length in the upper region as there are threads per unit length in the lower region.

47. The screw of claim 45 wherein the head is provided with a top surface having a
10 #2 square opening.

~~sub b~~ 48. The screw of claim 45 wherein the thread pattern of the lower region is
symmetrical.

15 49. The screw of claim 45 wherein the cross sectional area of the shaft in the upper
region is greater than the cross sectional area of the shaft in the lower region.

~~sub c~~ 50. The screw of claim 45 wherein the upper region has an inverted buttress thread
configuration.

20 51. The screw of claim 45 wherein the tip is a gimlet tip having an included angle
from about 20° to about 30°.

~~sub a~~ 52. A screw for securing wood products, comprised of:

25 a shaft and a head, wherein the head is provided with a top surface having
an opening to receive a tool, a bottom surface, a crown that extends around the
perimeter of the head, wherein the crown extends beyond the lower surface of the
head, forming a recessed region between the lower edge of the crown and the
shaft of the screw;

30 wherein the shaft is provided with a threaded upper region located
proximate the head and a threaded lower region located near a distal end of the

screw, the distal end having a tip, and the number of threads per unit length in the upper region exceeds the number of threads per unit length in the lower region.

5 *Sub a>* 53. The screw of claim 52 wherein there are at least twice as many threads per unit length in the upper region as there are threads per unit length in the lower region.

Sub aii> 54. The screw of claim 52 wherein the head is provided with a top surface having a #2 square opening.

10 *Sub aii>* 55. The screw of claim 52 wherein the thread pattern of the lower region is symmetrical.

15 56. The screw of claim 52 wherein the cross sectional area of the shaft in the upper region is greater than the cross sectional area of the shaft in the lower region.

Sub b> 57. The screw of claim 52 wherein the upper region has an inverted buttress thread configuration.

20 58. The screw of claim 52 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

25 *Sub a2>* 59. A screw for securing wood products, comprised of:
a shaft and a head, wherein the head is provided with a top surface having an opening to receive a tool and a bottom surface having a v-shaped undercut;
wherein the shaft is provided with a threaded upper region located proximate the head and a threaded lower region located near a distal end of the screw, the distal end having a tip, and the number of threads per unit length in the upper region exceeds the number of threads per unit length in the lower region.

Sub 0. > 60. The screw of claim 59 wherein the v-shaped undercut has a conical surface that connects the lip with a conical underside of the head.

5 61. The screw of claim 60 wherein the conical surface slants away from the lip toward the axis of the shaft at an angle of approximately 45°.

62. The screw of claim 59 wherein there are at least twice as many threads per unit length in the upper region as there are threads per unit length in the lower region.

10 Sub 9. > 63. The screw of claim 59 wherein the head is provided with a top surface having a #2 square opening.

15 Sub 9. > 64. The screw of claim 59 wherein the thread pattern of the lower region is symmetrical.

65. The screw of claim 59 wherein the cross sectional area of the shaft in the upper region is greater than the cross sectional area of the shaft in the lower region.

20 Sub 0. > 66. The screw of claim 59 wherein the upper region has an inverted buttress thread configuration.

67. The screw of claim 59 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

Sub 4. > 25 68. A screw for securing wood products, comprised of:
a shaft and a head, wherein the head is provided with a top surface having an opening to receive a tool;
wherein the shaft is provided with a threaded upper region located proximate the head and a threaded lower region located near a distal end of the screw, the distal end having a tip, wherein the cross sectional area of the shaft in the upper region is greater than the cross sectional area of the shaft in the lower region, the number of

threads per unit length in the upper region is greater than the number of threads per unit length in the lower region, and wherein the upper region has an inverted buttress thread configuration.

5 Sub 0. 69. The screw of claim 68 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head and extends beyond the lower surface of the head thereby defining an open volume between the lower edge of the crown and the shaft of the screw.

10 70. The screw of claim 68 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head, wherein the crown extends beyond the lower surface of the head, forming a recessed region between the lower edge of the crown and the shaft of the screw.

15 71. The screw of claim 68 wherein the head is provided with a bottom surface having a v-shaped undercut.

72. The screw of claim 68 wherein the head is provided with a bottom surface having a v-shaped undercut having a conical surface in the undercut that connects the lip with a conical underside of the head.

20 73. The screw of claim 72 wherein the conical surface slants away from the lip toward the axis of the shaft at an angle of approximately 45°.

25 Sub Am 74. The screw of claim 68 wherein the head is provided with a top surface having a #2 square opening.

75. The screw of claim 69 wherein the head is provided with a top surface having a #2 square opening.

76. The screw of claim 70 wherein the head is provided with a top surface having a #2 square opening.

5 77. The screw of claim 71 wherein the head is provided with a top surface having a #2 square opening.

78. The screw of claim 72 wherein the head is provided with a top surface having a #2 square opening.

10 79. The screw of claim 73 wherein the head is provided with a top surface having a #2 square opening.

Sub 9 80. The screw of claim 68 wherein the thread pattern of the lower region is symmetrical.

15 81. The screw of claim 68 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

82. The screw of claim 69 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

20 83. The screw of claim 70 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

84. The screw of claim 71 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

25 85. The screw of claim 72 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

86. The screw of claim 73 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

30 87. The screw of claim 74 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

88. The screw of claim 75 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

89. The screw of claim 76 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

5 90. The screw of claim 77 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

91. The screw of claim 78 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

10 92. The screw of claim 79 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

93. The screw of claim 80 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

15 *sub 6a* 94. A screw for securing composite lumber products, comprised of:

a shaft and a head, wherein the head is provided with a top surface having an opening to receive a tool;

20 wherein the shaft is provided with a threaded upper region located proximate the head and a threaded lower region located near a distal end of the screw, the distal end having a tip, wherein the cross sectional area of the shaft in the upper region is greater than the cross sectional area of the shaft in the lower region, the number of threads per unit length in the upper region are at least twice the number of threads per unit length in the lower region, and wherein the upper region has an inverted buttress thread configuration.

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sub 6b 95. The screw of claim 94 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head and extends beyond the lower surface of the head thereby defining an open volume between the lower edge of the crown and the shaft of the screw.

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96. The screw of claim 94 wherein the head is provided with a bottom surface, a crown that extends around the perimeter of the head, wherein the crown extends beyond the lower surface of the head, forming a recessed region between the lower edge of the crown and the shaft of the screw.

5 97. The screw of claim 94 wherein the head is provided with a bottom surface having a v-shaped undercut.

10 98. The screw of claim 85 wherein the head is provided with a bottom surface having a v-shaped undercut having a conical surface in the undercut that connects the lip with a conical underside of the head.

Sub 99. The screw of claim 86 wherein the conical surface slants away from the lip toward the axis of the shaft at an angle of about 45° to about 55°.

Sub 100. The screw of claim 94 wherein the head is provided with a top surface having a #2 square opening.

15 101. The screw of claim 83 wherein the head is provided with a top surface having a #2 square opening.

Sub 102. The screw of claim 84 wherein the head is provided with a top surface having a #2 square opening.

20 103. The screw of claim 85 wherein the head is provided with a top surface having a #2 square opening.

104. The screw of claim 86 wherein the head is provided with a top surface having a #2 square opening.

25 105. The screw of claim 87 wherein the head is provided with a top surface having a #2 square opening.

Sub D. 106. The screw of claim 94 wherein the thread pattern of the lower region is symmetrical.

5 107. The screw of claim 94 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

108. The screw of claim 95 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

10 109. The screw of claim 96 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

110. The screw of claim 97 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

111. The screw of claim 98 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

15 112. The screw of claim 99 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

Sub D. 113. The screw of claim 100 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

20 114. The screw of claim 101 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

115. The screw of claim 102 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

25 116. The screw of claim 103 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

117. The screw of claim 104 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

118. The screw of claim 105 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.

30 Sub D. 119. The screw of claim 106 wherein the tip is a gimlet tip having an included angle from about 20° to about 30°.